Wildlife Management and Conservation
SFS 3500

Syllabus
4 Credits

The School for Field Studies (SFS)
Center for Endangered Species Conservation
Kimana, Kenya

This syllabus may develop or change over time based on local conditions, learning opportunities, and faculty expertise. Course content may vary from semester to semester.

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COURSE CONTENT SUBJECT TO CHANGE

Please note that this is a copy of a recent syllabus. A final syllabus will be provided to students on the first day of academic programming.

SFS programs are different from other travel or study abroad programs. Each iteration of a program is unique and often cannot be implemented exactly as planned for a variety of reasons. There are factors which, although monitored closely, are beyond our control. For example:

- Changes in access to or expiration or change in terms of permits to the highly regulated and sensitive environments in which we work;
- Changes in social/political conditions or tenuous weather situations/natural disasters may require changes to sites or plans, often with little notice;
- Some aspects of programs depend on the current faculty team as well as the goodwill and generosity of individuals, communities, and institutions which lend support.

Please be advised that these or other variables may require changes before or during the program. Part of the SFS experience is adapting to changing conditions and overcoming the obstacles that they may present. In other words, this is a field program, and the field can change.
Course Overview

This one-month course will focus on diverse aspects of wildlife conservation and management in Kenya, East Africa. It will apply a multipronged learning approach using classroom lectures, field lectures, field-based exercises, and group discussions. This will be augmented with field excursions and experiential learning in some of the famous protected areas in Kenya mainly Amboseli National Park and the Maasai-Mara National Reserve. The latter lies contiguous to the Serengeti National Park along the Kenya-Tanzania borderland. Overall, this interdisciplinary curriculum is designed to assist students actively discover and understand the complexities of environmental and social-economic issues in Kenya and how they influence wildlife management and conservation as well local perceptions towards wildlife and its conservation.

Primarily, the course will expose students to wildlife conservation and management approaches and policies in Kenya, challenges and complexity of sustainable wildlife management and conservation. It combines concepts and principles of ecology, wildlife management and human dimensions of conservation, which is central to effective and sustainable wildlife conservation. During the course, students will explore the socio-cultural, political, and economic context of the relationship between people and wildlife in Kenya using the Amboseli Ecosystem as a case study. This ecosystem is a prime wildlife endowed landscape in the country but it’s being overran rapidly by rising human population, development, land tenure and land use changes. Wildlife conservation in the ecosystem will therefore be examined in the context of competing and economically lucrative land use alternatives especially pastoralism, agriculture, and agro-pastoralism. To understand the present, past, and future of wildlife conservation, its management and sustainability as a land use in the ecosystem and in the country, students will examine relevant policy and legal frameworks, land tenure regimes and local people’s attitudes towards wildlife. Additionally, the course will examine the pitfalls and success of community conservation and inadequate involvement of local communities in wildlife conservation initiatives.

Case Study Overview and Background

Title of Case Study
The influence of biophysical and socio-cultural factors on wildlife and other natural resources conservation and management in the Amboseli Ecosystems of East Africa

Case Study Question
How can changes in land tenure, natural resources utilization and availability, human demography and land use in the Amboseli Ecosystem be effectively managed to promote the socio-economic wellbeing of local communities whilst promoting wildlife conservation?

Background: The Amboseli Ecosystem
The basis for this case study is the Ecosystem Approach, which underpins the need to promote landscape connectivity as a key pillar in sustainable and long-term conservation of wildlife. Most of the learning will focus on the Amboseli Ecosystem which is situated in the Southeastern sector of Kenya. The ecosystem comprises of expansive Maasai Group Ranches, which are privately owned parcels of land along the Kenya-Tanzania border, protected areas, mainly, Amboseli, N. Park and several private wildlife sanctuaries/conservancies. It also neighbors the Chyulu Hills, Tsavo West and Mt. Kilimanjaro N. Parks, and has a mixed community made up of different ethnic groups; the Maasai, Kikuyu and Kamba among others. Of importance are the Maasai people, whose pastoral lifestyle has remained highly tied to the environmental conditions and dynamics of the landscape. Thus, this landscape, unlike most parts
of the country, is still endowed with diverse and high wildlife abundance including elephants albeit in a rapidly human altered environment.

Like other parts of the country, the Amboseli region is changing rapidly and it’s increasingly becoming a human dominated landscape characterized by expanding settlements and infrastructure development. Additionally, it’s experiencing rapid and significant shifts in land tenure and use patterns, and socio-economic changes among the Maasai and migrants, which is increasing human-wildlife competition for scarce resources (e.g., space, water, and pasture). Unfortunately, the resultant human-wildlife conflicts have serious and long-term wildlife, natural resources conservation ramifications as well as socio-economic costs. They are an immediate and present danger to effective and sustainable wildlife conservation, and the historical harmonious co-existence between people and wildlife. The threats facing wildlife conservation are also a big danger to availability and sustainable use of other critical natural resources particularly water, pasture, and woody plants. And recently, Climate change has also become another serious and worrisome environmental challenge, and whose impacts on the environment, wildlife, and natural resources as well as local livelihoods are devastating.

Water is also a critical resource limiting land use, plant productivity, wildlife movement and spatial distribution in the Amboseli Ecosystem. There is a natural scarcity of water in this region because it lies in the rain shadow of Mt. Kilimanjaro. To compound the problem, Mt. Kilimanjaro’s icecaps have been documented to be rapidly receding so much that fewer rivers and streams emerge today from underground hydrological systems. Since water is a limiting resource in the ecosystem, such areas are under pressure for degradation due to over-exploitation by community home use, wildlife, livestock, and irrigated farming activities. This situation has further been worsened by recent Climatic changes characterized by highly irregular and insufficient rains, frequent dry spells, and droughts. There is an urgent need to understand the socio-economic, political, and environmental drivers and implications of land reform for wildlife conservation and local livelihoods in this rapidly dynamic and changing landscape.

Another notable change in the Amboseli region is increase in human demography including a high influx of non-Maasai ethnic groups such as the Kikuyu and Kamba. To some extent this has increased demand for natural resources, and land for settlements. The later has lured the Maasai to sell their land due to its high lucrative financial returns, further creating an unfavorable environment for wildlife and natural resources conservation. In addition, the state of environmental and natural resources governance in the entire region is very poor, uncoordinated, and existing laws and guidelines are not effectively enforced by government leading agencies. Accordingly, there’s rampant environmental degradation, misuse, commercialization, and overexploitation of natural resources with total disregard of the impacts on livelihoods which are largely dependent on natural resources.

During the summer I program, we will visit Amboseli National Park, community conservancies in the former Kimana group ranch, and a camping trip to the world famous Maasai Mara. In the Mara, students will learning various aspects of wildlife conservation including cross-border conservation challenges between Kenya and Tanzania and compare these with aspects covered in the Amboseli region.


**Learning Objectives**

The overarching objective of the course is to expose students to various wildlife conservation and management issues in the Amboseli Ecosystems, and generally in Kenya. An in-depth understanding of these issues will provide the platform upon which students and Faculty will examine and propose realistic and holistic approaches to effective and sustainable wildlife conservation in the ecosystem and at the national level. This process will be achieved through interactive learning and experiential activities, lectures by Faculty and guest lecturers, field exercises, class discussions, and field lectures.

Ultimately the specific objectives of the course are to:
1. Use various field techniques to identify large African wildlife mammalian species and perform wildlife counts and study their ecology, social and behavior.
2. Examine the human-environment interactions in the Amboseli Ecosystem, and their impacts on wildlife, its conservation, and the human-wildlife interface and the resultant conflicts.
3. Argue for the need to involve communities in wildlife conservation and ensure they benefit directly and indirectly.
4. Investigate how challenges and opportunities facing wildlife conservation in local contexts are embedded in global and national political and economic processes.
5. Produce education materials that can be used to promote conservation in the Amboseli ecosystem.

**Assessment**

<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>Value (%)</th>
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<tbody>
<tr>
<td>African wild large mammal identification and social organization</td>
<td>15</td>
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<tr>
<td>Ethnobotany of the Amboseli Maasai: Photo exhibition and Presentation</td>
<td>10</td>
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<tr>
<td>Large wild mammal count in Amboseli N. Park</td>
<td>15</td>
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<tr>
<td>Maasai ontologies of climate change</td>
<td>15</td>
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<tr>
<td>Impacts of tourism in Maasai Mara: Reflection notes</td>
<td>5</td>
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<tr>
<td>Final exam</td>
<td>30</td>
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<tr>
<td>Participation</td>
<td>10</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
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</table>

**African wild large mammal identification and social organization (15%)**

A key skill for wildlife conservation managers and wildlife biologists is ability to identify, differentiate, sex and age wild large mammals. In addition, they also need to understand the social systems found in different species and how this information can be used to enhance species conservation. This exercise will be done in Amboseli N. Park, a key wildlife conservation area in the Amboseli Ecosystem. During the exercise, students will identify, differentiate, age and sex large wildlife species. Each student will use this information to write a report using guidelines provided by Faculty for grading.

**Ethnobotany of the Amboseli Maasai: Photo exhibition and Presentation (10%)**

Guided by faculty and local Maasai informant, students will conduct a field exercise within KBC and former Kimana Group Ranch. Students will take high quality photographs of plants, then collect information about local uses of those plants and the implication of indigenous knowledge about them on conservation. Students will synthesize the information to develop a high-quality photo catalogue for grading. This exercise will enable students to learn about the different ways in which Maasai people...
interact with vegetation in AE and appreciate the potential role of Maasai’s indigenous knowledge in conservation. Students will make presentations of their photo catalogue.

Large wild mammal count in Amboseli N. Park (15%)
An understanding of the abundance and spatial distribution of wildlife species is a key pillar for their effective and sustainable conservation and management. In some instances, this is augmented by evaluating the kind of habitats selected for by various wildlife species including levels of species diversity in different habitats found in a protected area. Collectively, all this information is used to make critical policy, management, and conservation decisions. In this regard, this exercise will be done in Amboseli N. Park and students will count, age and sex large wild mammal species found in the park using the road count method. Faculty will guide student how to synthesis the data collected and specifically they will determine; a) abundance of each wildlife species counted, b) habitat selection of each species using Jacob’s selection index, and c) species diversity and evenness in each habitat type. Each student will use the results to write a 3-to-4-page report for grading based on guidelines provided by the Faculty.

Maasai ontologies of climate change (15%)
Students will conduct a short household survey, to collect data on impacts on how climate change (through droughts), is experienced by Masai pastoralists in former Kimana Group Ranch. Students will analyze the data and write a short individual report (3-4 pages) for grading.

Impacts of tourism in Maasai Mara: Reflection notes (5%)
After a travelling lecture on how tourism impacts wildlife conservation in the Maasai Mara National Reserve, students are required by faculty to write reflection notes on possible ways in which they can influence a positive change. These notes are written by hand in students’ notebooks and graded.

Final Exam (30%)
There will be a written exam that accounts for 30% of the overall course grade and will comprise of short answer questions. Students will be expected to demonstrate an understanding of various competences and knowledge of conservation issues in the Amboseli and Maasai-mara Ecosystems. Each of the two faculties shall set 4 questions with an equal weight of 7.5%, from which students will answer any 2 questions. Therefore, all together, students will answer 4 questions. The exam shall last 2 hours.

Participation (10%)
Both faculties shall work together to evaluate students on their participation throughout the course. A grading rubric shall be provided to students at the beginning of the program.

Grading Scheme

<table>
<thead>
<tr>
<th>Grade</th>
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<tbody>
<tr>
<td>A</td>
<td>95.00 - 100.00%</td>
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<tr>
<td>A-</td>
<td>90.00 - 94.99%</td>
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<tr>
<td>B+</td>
<td>86.00 - 89.99%</td>
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<tr>
<td>B</td>
<td>83.00 - 85.99%</td>
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<tr>
<td>B-</td>
<td>80.00 - 82.99%</td>
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<tr>
<td>C+</td>
<td>76.00 - 79.99%</td>
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<tr>
<td>C</td>
<td>73.00 - 75.99%</td>
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<tr>
<td>C-</td>
<td>70.00 - 72.99%</td>
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<tr>
<td>D</td>
<td>60.00 - 69.99%</td>
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<tr>
<td>F</td>
<td>0.00 - 59.99%</td>
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General Reminders

Readings – Assigned readings and hand outs (exercises/assignments) will be available prior to the scheduled activities. Course readings must be read and clarification on issues sought where necessary since ideas and concepts contained in them will be expected to be used and cited appropriately in assigned course essays and research papers.

Plagiarism – Using the ideas and material of others without giving due credit is cheating and will not be tolerated. A grade of zero will be assigned if anyone is caught cheating or aiding another person to cheat actively or passively (e.g., allowing someone to look at your exam).

Deadlines – Deadlines for written field exercises and other assignments are posted to promote equity among students and to allow faculty ample time to review and return assignments in good time. As such, deadlines are firm, and extensions will only be considered under the most extreme circumstances. Late assignments will incur a 10% penalty for each hour that they are late. This means an assignment that is five minutes late will have 10% deducted. An assignment that is one hour and five minutes late will have 20% of the grade deducted.

Participation – Since we offer a program that is likely more intensive than you might be used to at your home institution, missing even one lecture can have a proportionally greater effect on your final grade simply because there is little room to make up for lost time. Participation in all components of the program is mandatory because your actions can significantly affect your experience and that of your classmates have while at CWWS. Therefore, it is important that you are prompt for all course activities.

Course Content

Type: L: Lecture, F: Film, FL: Field Lecture, GL: Guest Lecture, FEX: Field Exercise, D: Discussion, Lab: Classroom lab/workshop

*Required readings are in bold

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<thead>
<tr>
<th>No</th>
<th>Title and outline</th>
<th>Type</th>
<th>Time (hrs)</th>
<th>Readings</th>
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</thead>
</table>
| 1  | Case study overview: conservation issues in the Amboseli Ecosystem  
Lecture provides a broad scope of the human dimensions and natural resources conservation issues in the Amboseli Ecosystem | L | 1 hour 40 mins | Okello, M. M. (2005).  
| 2  | Introduction to conservation issues in the Kimana area  
A drive through field lecture in the former Kimana Group Ranch during which Faculty will make strategic stops to demonstrate to the students the following: manifestations of land uses, abstraction of water resources, general state of the ecosystem/landscape environment, community conservation initiatives, wildlife habitats fragmentation and loss of landscape ecological connectivity. This lecture and WCM 01 will collectively ground the students in understanding the human dimensions of the ecosystem and their influence on conservation. | TL | 2 hours 30 mins | Okello and D’Amour (2008).  
Okello (2009). |
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<tr>
<td>3</td>
<td><strong>Taxonomy of wild African large mammals</strong>&lt;br&gt;The lecture will explore basic taxonomy or classification for most common large wild African mammals which students will see in the field during the program. It will also highlight radiation of the family Bovidae which has numerous species which are frequently found in most parts of Africa.</td>
<td>L</td>
<td>1 hour 40 mins</td>
<td>Estes, R. D. (1991). Reference book, available in the library &lt;br&gt;Kingdon, J. (1997). Reference book, available in the library</td>
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<td>4</td>
<td><strong>African wild large mammal identification and social organization (Theory)</strong>&lt;br&gt;In this lecture students will learn why studying large mammal social organization is important. They will also learn about dominance and hierarchical manifestations of social organization in wild large mammals and common social organization types. The lecture will explore how to identify common large wild African mammals, distinguish between males and females of different species in the field where possible. It will highlight links between animal behavior and their conservation.</td>
<td>L</td>
<td>1 hour 40 mins</td>
<td>Estes, R. D. (1991). &lt;br&gt;Kingdon, J. (1997).</td>
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<td>5</td>
<td><strong>African wild large mammal identification and social organization (Field practice)</strong>&lt;br&gt;In this FEX students will learn and identify common large wild mammals found in the African savannahs. They will also learn how to distinguish between males and females of various species they will come across in the field. Each student will write a report for grading.</td>
<td>FEX</td>
<td>3 hours</td>
<td>Kingdon, J. (1997).</td>
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<td>6</td>
<td><strong>Historical background of conservation practice/thought Film: A place without people (54 min)</strong>&lt;br&gt;This film tackles the history of creation of world-famous conservation areas in Africa, and associated human rights issues. Focusing on Tanzania’s Serengeti and Ngorongoro parks, the film shines a light on the intersection of conservation, land use, community livelihoods and tourism industry, which has similarities with Kenya.</td>
<td>L; F</td>
<td>1 hour 40 mins</td>
<td>Nelson (2003). &lt;br&gt;Kothari et al. (2013).</td>
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<td>No</td>
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<td>8</td>
<td>Ethnobotany of the Kenyan Maasai (II)</td>
<td>FEX</td>
<td>3 hours</td>
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<td></td>
<td>Students will visit Maasai locations to collect photos and information for their photo catalogue</td>
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<td>9</td>
<td>The Lion lights project: Solutions to human large carnivore conflicts</td>
<td>F; D</td>
<td>2 hours</td>
<td>Okello (2005).</td>
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<td></td>
<td>This is a discussion panel with former SFS students. The panel begins with two films on the problem of human wildlife conflicts in Kenya. The faculty then makes introductory remarks to foreground the discussion. Students then join in a panel discussion, especially focusing on the rationale of the project, preparation and how to engage with communities.</td>
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<td>10</td>
<td>Large wild mammal count methods (Theory)</td>
<td>L</td>
<td>1 hour 40 mins</td>
<td>Okello (2005).</td>
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<td></td>
<td>The lecture will introduce students to common techniques of counting large wild mammals, rationale for the counts and underlying considerations. Students will learn how to plan, prepare, and conduct counts in protected areas.</td>
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<td>11</td>
<td>Presentation and Discussion on Maasai Ethnobotany</td>
<td>D</td>
<td>1 hour 40 mins</td>
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<td>Students present their findings for WCM 08 in groups. Students and faculty staff are encouraged to engage in a discussion with each group presenting. The presentation accounts for 10% of the overall course grade.</td>
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<td>12</td>
<td>Large wild mammal count (Field practice)</td>
<td>FEX</td>
<td>3 hours</td>
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<td>In this field exercise, students will conduct a ground census of large wild mammal species in Amboseli N. Park using the road count method. Later students will synthesis the data collected under the guidance of the faculty and use the results to write a 3-4 parge report for grading.</td>
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<td>13</td>
<td>A critical analysis of Maasai Manyattas as ecotourism enterprises and/or cultural entities</td>
<td>FEX</td>
<td>1 hour 40 mins</td>
<td>Bruner, M. E and Kirshenblatt-Gimblett, B. (1994).</td>
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<td>Students will visit a Maasai cultural Manyatta, discuss with residents and examine the role played by manyattas in cultural tourism and conservation in the Amboseli region.</td>
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<td>Hitchcock, Robert K., et al. (1990).</td>
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<td>Donald Macleod (2002).</td>
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<td>Our ways of knowing the weather are transforming. Climate change modifies weather patterns, and the globalization of scientific knowledge promotes new ways of making the weather intelligible. This lecture prepares students for a fascinating field exercise of exploring how Maasai agro-pastoralists in ATE make use of various indigenous,</td>
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<td>Schnegg, M., et al. (2021).</td>
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<td>religious, political, and scientific explanations for the changing weather-related phenomena they experience—droughts, floods, winds, cloud cover etc. The lecture will introduce the theme of Maasai climate ontologies and guide students in developing guiding questions for focus group interviews with local Maasai elders.</td>
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| 15 | **The Maasai ontologies of weather and climate change and implication on conservation in ATE**  
In this field exercise students will conduct focus group interviews with selected Maasai elders, with knowledge on environmental changes in ATE. Students will aim to understand and document local ways of knowing and interpreting weather patterns and changes over time. Furthermore, they will explore the implications of this knowledge and ways of knowing on conservation efforts in ATE. Students will write a report for grading (15%). | FEX  | 3 hours    |          |
| 16 | **Techniques for assessing species diversity**  
This topic will explore large wild mammal species diversity and common metrics on how to describe animal communities.                                                                                                                                                                                                                                                                                                                                                                           | L    | 1 hour 40 mins | Brower, J.E. & Zar, J. H. (1977).  
Msuha et al. (2012). |
| 17 | **Techniques for assessing resource selection**  
This lecture will teach students the difference between resource usage and selection and introduce key concepts for measuring habitat preferences by animals                                                                                                                   | L    | 1 hour 40 mins | Jacobs J. (1974).  
| 18 | **Assessment of wildlife density, habitat selection and species diversity**  
This lab session will teach students how to summarize, analyze & interpret wildlife count data and to estimate density and diversity of large wild mammals from count data collected in Amboseli N. Park. They will acquire quantitative skills in assessing wildlife habitat selection, species diversity & density in conservation areas. Results from the lab will be used to write a 3–4-page report. | Lab  | 2 hours 30 mins | Okello, M.M. and Kioko, J. M. (2010).  
UNEP (2019).  
| 19 | **Insularization of Amboseli N. Park and conservancies in the Amboseli Ecosystem causes and consequences**  
Lecture will examine isolation of Amboseli Park and the emerging wildlife conservancies in the Maasai group ranches of the Amboseli Ecosystem (i.e., nature, causes and severity). It will also examine the ecological consequences of this isolation and its effects on viability of these protected areas and biodiversity conservation. | L    | 1 hour 40 mins |          |
| 20 | **Women Rights and Environmental Justice Movement in Kenya: The Philosophy of Wangari Maathai**  
Wangari Maathai was, and still is a celebrated Kenyan environmental activist and the first African woman to win | L; F | 2 hours 30 mins |          |
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| 21 | **Impacts of tourism on wildlife conservation in Maasai Mara Game Reserve**  
Students will take a travelling lecture while observing and taking note of various impacts of tourism such as overcrowding, off-road driving, habituation of wildlife in Maasai Mara Game Reserve. Students are later in the day asked to write very brief reflection notes which shall be graded and account for 5% of the overall course grade. | FL   | 1 hour 40 mins | Holland, K. K., et al. (2021).  
| 22 | **Wildebeest migration and demography in the Serengeti-mara ecosystem**  
Lecture will focus on the triggers of wildebeest migration between Kenya and Tanzania, importance of migration to the wildebeest, and the role of migrant wildebeest in the structure and function of the Mara-Serengeti Ecosystem. It will also examine the effects of land use changes and climate change in the ecosystem are affecting the wildebeest migration. | FL   | 1 hour 20 mins | |
| 23 | **Cheetah ecology and conservation**  
Lecture will provide background on life history traits and conservation challenges of this wide-ranging African savanna hunter. Historical and recent events in population decline and current conservation efforts are the basis for discussions for future potential conservation approaches. | L    | 1 hour 20 mins | Dobrynin et al. (2015). |
| 24 | **Mitigating Human- Large Carnivore conflicts in Maasai Mara Ecosystem: Nature, scope and mitigation measures**  
This guest lecture will explore some of ways through which human activities conflicts with large carnivore in the Maasai Mara ecosystem and their trends over the last 5 years. The guest lecture will explain the implications of this scenario to conservation of those species and discuss some of the mitigation and adaptation strategies. | L    | 1 hour 40 mins | Broekhuis, F., et al. (2020).  
| 25 | **Community conservancies in the Maasai Mara Ecosystem and impacts of COVID-19 on conservation**  
Community conservancy is one of the approaches through which community-based conservation has been implemented in Kenya. This guest lecture will be offered by a staff of Maasai Mara Wildlife Conservancies Association, while students are camping in the Maasai Mara National Park. The lecture will explore the contribution of the conservancy to wildlife conservation and poverty alleviation | L    | 1 hour 40 mins | Chakrabarti, S. (2021).  
Wildlife diseases and conservation
This lecture will provide background information on the importance of diseases in wildlife conservation. It will also examine the role of climate change in aspects of wildlife diseases.

Course overview and Exam Review
In this class, the instructors shall do an overall review or recap of the course, highlighting main themes and messages, and outline topics that students should put more effort and focus for the exam. Students will have a chance to seek further clarifications on course topics and practical as well as administrative matters of the exam.

Reading List

*Required readings are in bold


